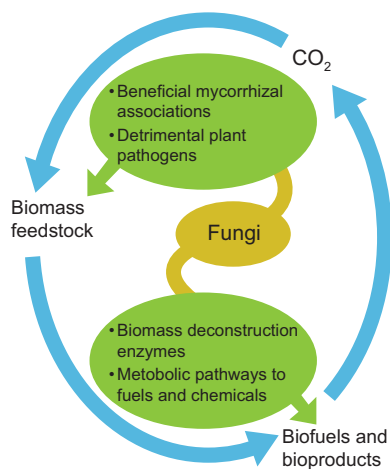


## Fungal Genome Program

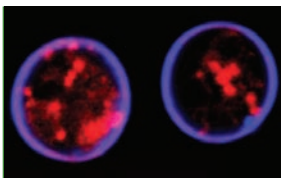
**DOE JGI Fungal Projects:**  
50+ fungal projects at different stages  
21 annotated genomes publicly available  
in March 2009

Encoded in the genomes of the organisms of the kingdom Fungi are biological processes with major relevance to DOE missions in bioenergy production, biogeochemistry, and carbon cycling. We know this from both experimental and genome sequence-based evidence. For example, in the area of enzymatic biomass deconstruction, an important process in the production of cellulosic-based renewable fuels, years of experimental biochemical-based evidence suggests that fungi are able to easily deconstruct plant biomass into its component sugar building blocks. Genomic-based evidence suggests that the experimentally described enzymatic



activities are merely a shadow of the potential enzyme activities encoded within a fungal genome.

The DOE JGI is engaged in sequencing a significant breadth and depth of fungi to establish a rich catalog of tools in the form of pathways and enzymes that can be brought

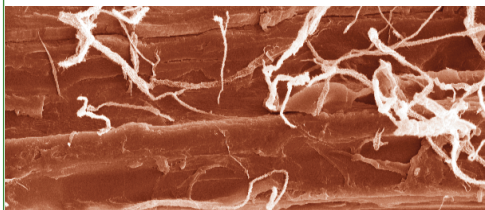


Genomics Program comes the opportunity for a unified message to articulate the needs of the fungal biology research community with respect to genomics.

**The Community Sequencing Program (CSP)** was created to provide the scientific community at large with access to high-throughput sequencing at the DOE JGI. Sequencing projects are chosen based on scientific merit—judged through independent peer review—and relevance to the DOE mission.  
<http://www.jgi.doe.gov/CSP/overview.html>

**Genome Portal and Community Annotation Tools** The DOE JGI Genome Portal (<http://genome.jgi-psf.org>) provides web-based access to an interactive repository of genome assemblies and annotations equipped with analytical and editing tools to explore genome, gene families, and pathways in comparative fashion. The DOE JGI Community Annotation model integrates automated annotation with distributed community-wide efforts worldwide and enables users to actively participate in genome annotation and analysis, to improve annotations and build stronger user communities. Online Genome Portal Tutorial is available from [genome.jgi-psf.org](http://genome.jgi-psf.org)

The DOE JGI Genome Projects with their status and available tools are listed at <http://www.jgi.doe.gov/genome-projects/>



to bear on the important problems related to DOE missions. With the formation of the DOE JGI Fungal

**Program Goals** The DOE JGI will be seeking fungal genome sequencing projects related to:

- discovery of enzymes for degrading/processing plant cell walls
- investigations of carbon cycling mechanisms
- sampling phylogenetic breadth
- deep sequencing of DOE targeted groups
- exploring ecological diversity
- fungal genomes will be sequenced using a hybrid approach, which features all the benefits of the new sequencing technologies combined with the targeted amount of traditional data.

For more information about the DOE JGI Fungal Genome Program, please contact program coordinators:

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**User/CSP Questions**

### DOE JGI Projects Published

1. Martinez et al (2009) Genome, transcriptome, and secretome analysis of wood decay fungus *Postia placenta* supports unique mechanisms of lignocellulose conversion. *Proc Natl Acad Sci U S A.*, 106, 1954-1959
2. Martinez et al (2008) Genome sequencing and analysis of the biomass-degrading fungus *Trichoderma reesei*. *Nature Biotechnology.* 26, 553-560.
3. Martin et al (2008) The genome of *Laccaria bicolor* provides insights into mycorrhizal symbiosis. *Nature.* 452, 88-92.
4. Jeffries et al. (2007) Genome sequence of the lignocellulose-bioconverting and xylose-fermenting yeast *Pichia stipitis*. *Nature Biotechnology.*, 25, 319-326.
5. Tyler et al (2006) *Phytophthora* genome sequences uncover evolutionary origins and mechanisms of pathogenesis. *Science.* 313, 1261-1266.



The U.S. Department of Energy (DOE) Joint Genome Institute (JGI), supported by the DOE Office of Science, advances genomics in support of the DOE missions related to bioenergy, carbon cycling, and biogeochemistry. The DOE JGI, located in Walnut Creek, California, provides integrated high throughput sequencing and computational analysis which enable systems-based scientific approaches to these challenges. <http://www.jgi.doe.gov/>